Laboratory report

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| Subject of the exercise: | Measuring electrical power (Exercise 4.) |
| **Date:** | <year>. <month>. <day> |
| **Students name:** | <name 1>  <name 2>  <name 3> |
| **Course and group No.** | Course: <Course No>, <Group No.> |
| **Supervisors:** | <name 1>, <name 2> |
| **Desk No.:** |  |

Applied instruments

|  |  |  |
| --- | --- | --- |
| Digital oscilloscope | Agilent 54622A | <serial number> |
| Digital multimeter (6½ digit) | Agilent 33401A | < serial number > |
| Digital multimeter (3½ digit) | Metex ME-22T | < serial number > |
| Analogue multimeter | Ganzuniv-3 | < serial number > |
| Electronic power-meter | Hameg HM8115 | < serial number > |
| Adjustable AC supply | Metrel MA-4804 | < serial number > |
| Hall-probe current meter | Hameg HZ-56 | < serial number > |
| R-L-C network panel |  |  |
| Incadescent lamp |  |  |
| PC’s power supply circuit |  |  |

Figure 4-1. The R-L-C network used in the measurement

h

A

B

a

b

c

d

e

**f**

**L**

**R**

**C**

Measurement Tasks

1. Analysis of the related powers of an R-L-C network by measurement and calculation

Create the circuit arrangement given by the leader of the measurement by plugging the cables, and measure the current, the voltage, the apparent, effective and reactive power and the power factor of the plugged circuit setting a 50 Hz supply voltage of 40 V effective

* 1. using the electronic power meter,
  2. using the three voltmeter method.

1. Calculate the error in case of measurement task 1.
2. Measure the characteristic of an incandescent lamp with a nominal voltage of 230 V, a nominal power of 40 W at 50 Hz by an electronic power meter while the supply voltage changes from 20 % up to 100 % of the nominal voltage in 10 % steps.
3. Plot the effective power, the resistance and the current graphically in case of measurement 3.
4. Measure the true r.m.s. value of the current taken by a personal computer configuration and the mains voltage, and give an estimation for the upper power limit of the taken effective power.